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COUNCIL
ON
COMPETITIVENESS

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COMPETITIVENESS INDEX 1991

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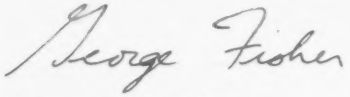
PREFACE

The Council on Competitiveness believes that if America is to compete successfully in world markets, both the American public and U.S. policymakers must have a clear understanding of the economic realities facing us. We realize that no single measure can assess economic competitiveness perfectly and have developed the Competitiveness Index as a way to gauge U.S. economic performance in a global context. Using four key economic indicators — investment, productivity, trade and standard of living — the Index compares U.S. performance to that of our chief industrial competitors over a 20-year timeframe.

1991 marks the fourth annual publication of the Council's Competitiveness Index. We have not changed the basic structure of the Index, but we have made several methodological improvements to provide a more detailed picture of U.S. international competitiveness.

Standard of living is our lead story this year. The ultimate goal of our democratic free-market economy is ensuring an ever-rising national standard of living. Standard of living is determined by how competitive exports are, how productive our workforce is, and ultimately, how committed we are to investing in our nation's future — in plant and equipment, R&D, training and education, and in basic economic infrastructure.

The Competitiveness Index does not make predictions. Past national performance, however, can yield some useful insights into how the economy might behave in the future and where there is room for improvement. We hope that you will find the 1991 Index helpful in understanding U.S. economic performance in the changing global economy.



George M.C. Fisher
Chairman

JULY 1991

INTRODUCTION

Now in its fourth year, the Competitiveness Index continues to offer a unique summary of U.S. competitiveness in the global economy. U.S. economic performance is compared with that of its major economic competitors — Canada, France, Germany, Italy, Japan, and the United Kingdom. Our purpose is to portray U.S. competitiveness relative to its past performance and to other international competitors.

The Pyramid

Because no single measure adequately reflects the complexity of a nation's competitive performance, the Council on Competitiveness uses a series of four economic indicators to assess U.S. competitiveness relative to the other Group of 7 (G-7) countries: investment, productivity, trade performance, and standard of living. The Council has constructed a four-tiered pyramid, by now familiar to past readers of the Index, to describe the interrelationship among these four indicators.

Investment is at the base of the pyramid, representing the foundation of economic activity and growth. It is the most basic and most future-oriented of the competitiveness indicators. How much we invest is an important determinant of our other three measures of competitiveness. Investment consists of expenditures on capital (plant and equipment), non-defense R&D, and education.

Manufacturing Productivity is positioned just above investment. Productivity is determined to a great extent by the quality and performance of the workforce, technological innovation, the state and quality of plant and equipment — in short, all sorts of investments. We focus on manufacturing productivity because it continues to account for about one-fifth of U.S. output and the bulk of U.S. trade. We measure manufacturing productivity by determining Gross Domestic Product (GDP) per employee in the manufacturing sector.

Trade is the third tier of our pyramid, above productivity. Trade is directly influenced by the quality, price, and supply of goods — all of which depend in large part on industrial productivity and investment performance. Exchange rates and trade policies abroad, of course, also affect international trade. With the growing internationalization of markets, trade plays an ever more important role in determining U.S. national income. Trade is measured as U.S. share of world exports, because exports are a good indication of a nation's ability to compete in world markets.

Standard of Living is at the top of the pyramid because it is the ultimate goal of a productive economy. Being internationally competitive translates into greater national wealth. Standard of living is measured as GDP per capita and reflects how much income is generated for every American.

Understanding the Index

Trends

Our report is divided into two parts: Trends and the Index. In the Trends section, we compare U.S. performance in investment, productivity, trade, and standard of living both relative to the past and relative to other G-7 economies. Each indicator features a chart that shows trends over time, from 1972 until the present. We chose 1972 as the starting year of our series

because it was the year before flexible exchange rates were introduced and before oil shocks fundamentally changed the international economy. The term "Other G-7" is used to refer to the average of all the G-7 countries *except* the United States.

There are several ways to calculate data. All of the data used in the Trends section is calculated in 1980 prices and exchange rates for all the G-7 countries. By using a given year's exchange rate over time, we get a picture of the underlying real growth rate of output over time. [Whenever we use the term "real" in our text, we are describing 1980 exchange rate adjusted data.] 1980 was chosen because it is regarded by many economists as a good base year for comparing the dollar relative to other national currencies. Our real trend charts are useful in showing convergence in performance over time between other G-7 countries and the United States.

A second way to look at the data is by using annually adjusted Purchasing Power Parities (PPPs). PPPs are a shorthand way of expressing the buying power in other countries relative to the buying power of the U.S. dollar in America. The OECD determines the PPP exchange rate by calculating how much it would cost to buy a standard basket of popularly purchased goods and services in different countries relative to how much the same basket costs in America. U.S. PPP is set at 1. The PPP goods basket is periodically updated to account for changes in consumption patterns over time, with the latest basket of goods reflecting 1985 purchasing patterns. We use nominal PPPs (current prices in PPPs) to show current level differences in investment, productivity and standard of living.

It is important to note that PPPs can only be used to show differences in *current levels* of performance among countries. They *cannot* be used to compare growth rates of different countries over time.

Finally, for some indicators (investment and trade) we also cite current dollar figures in our text. Current dollar data are frequently cited in the press and are the figures with which most people are familiar. Current dollars are one of several ways to look at the data.

The Index

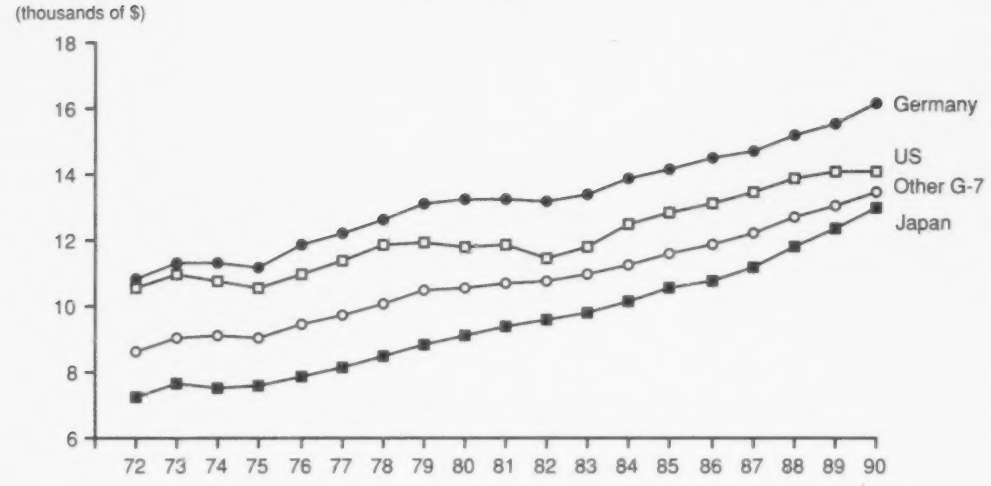
In the second half of our report, we present the Index. The Index is simply another way of looking at the information covered in the Trends section. The Council uses 1972 as its base year to measure the changing relative position of the United States over time, and the Index for 1972 is set at 100. A rise in the Index to more than 100 signifies the United States has outperformed other nations since then; a drop in the Index below 100 indicates other countries have outperformed the United States.

To maintain consistency, constant 1980 dollars are used exclusively in the Index. Again, the term "Other G-7" is used to define the average for all the Group of 7 industrial countries except the United States. All of the data used in the Index are from the OECD. A complete description of methodology and a full set of the data are available from the Council on Competitiveness. The WEFA Group provided technical assistance in the initial construction of the Index and subsequent revisions.

LONG TERM TRENDS

STANDARD OF LIVING

GDP per Capita
(Constant 1980 dollars)



Source: Council on Competitiveness and OECD National Accounts

Standard of Living

The U.S. standard of living in 1990 showed its first real decline in 8 years.

- **U.S. down in 1990:** After eight years of steady growth, the U.S. real standard of living declined slightly in 1990. No other G-7 country showed a decline in its standard of living in 1990, although some — such as Canada — made only weak gains.

- **Slowest growth in America:** The U.S. standard of living has risen more slowly than any Other G-7 country, growing only 33 percent in real terms from 1972-1990. The Other G-7 average grew by 57 percent. In 1990, the average Japanese was almost 80 percent more prosperous in real terms than in 1972. In Italy, per capita income grew by 64 percent over the same time period, in Canada, by 55 percent, and in Germany, by 48 percent.

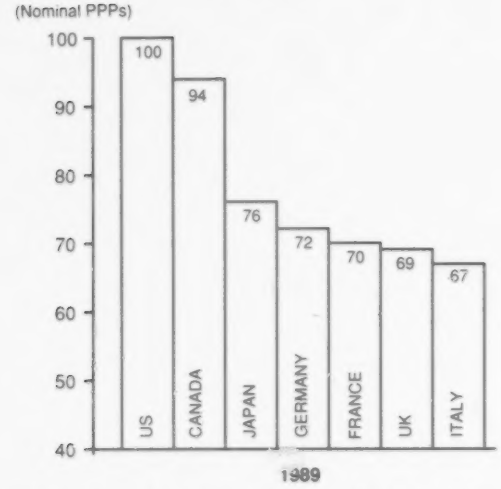
- **Unemployment rates:** Unemployment rates help fill out the standard of living picture. At 5.5 percent in 1990, U.S. unemployment was well below the Other G-7 average of 6.3 percent. Italy had the highest unemployment rate at 11 percent, and Japan had the lowest at 2.3 percent. More typical of the G-7 average were Canada, France and Germany with between 7 and 9 percent unemployment.

continued

STANDARD OF LIVING

G-7 Compared to U.S.

(Nominal PPPs)
US = 100



Source: Council on Competitiveness and OECD National Accounts

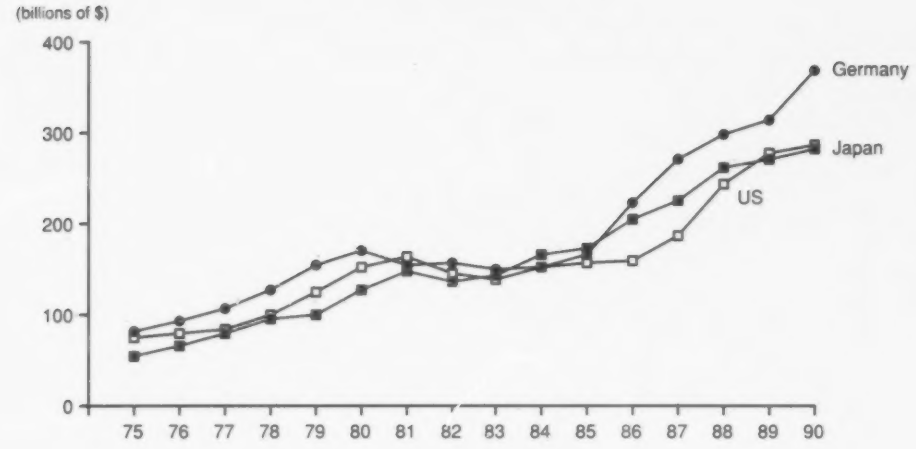
- **U.S. still first, but gap closing rapidly:** Although our trend chart shows the United States in second place after Germany, using nominal PPPs, which reflect the buying power in different countries, the United States holds first place in standard of living. The Other G-7, however, are closing the gap. In 1989, the Other G-7 average standard of living was 74 percent of the U.S. level, up from 64 percent in 1972. Japan showed the biggest gain, rising from 58 percent of the U.S. level in 1972 to 76 percent in 1989. By 1989, Canada had almost achieved parity with the United States — 94 percent. The German standard of living grew much more slowly, rising from 68 percent of the U.S. level in 1972 to 72 percent in 1989.

- **Bottom line:** Other industrial countries are clearly catching up to the U.S. standard of living. A rising standard of living around the globe benefits everyone — both in terms of expanding personal economic progress and opportunity, and in terms of industry's ability to develop more markets. Of concern, however, is slow growth in the U.S. standard of living resulting from the erosion of industrial competitiveness.

TRADE

Manufactured Goods Exports (f.o.b.)

(current dollars)



Source: Council on Competitiveness and OECD National Accounts

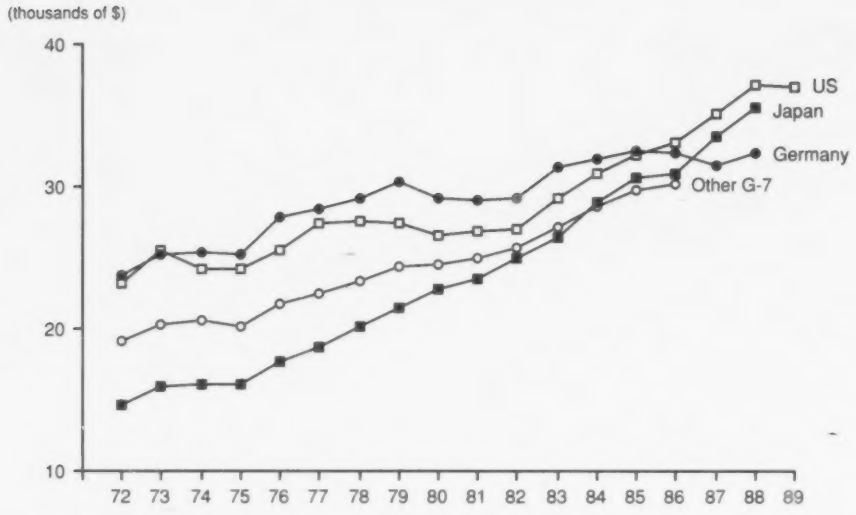
Trade

In 1990, Germany was the world's number one manufactured goods exporter with $368 billion in current dollars; the United States was number two with $287 billion; and Japan was number three with $282 billion.

- **U.S. exports back in form:** In 1990, the United States accounted for just over 11 percent of world manufactured goods exports in real terms, more than any other G-7 country except Germany. This level is in line with historical trends and represents a significant comeback from sluggish performance in the mid-1980s when the U.S. share dipped to 8.5 percent.
- **Japan holds steady:** Japan's real share of world manufactured goods exports has surged from 9 percent in 1972 to a peak of about 12.5 percent in 1985. Since 1987, Japan's share has held steady at about 10.5 percent. Part of the drop in Japan's export performance reflects a move by Japanese industry to produce goods off-shore.
- **Still a $100 billion U.S. trade problem:** The U.S. export boom in the last few years has helped bring down the merchandise trade deficit from a high of $156.5 billion (current dollars) in 1987 to $104.8 billion in 1990. Nevertheless, U.S. demand for foreign manufactured goods continues to be higher than foreign demand for U.S. manufactured goods. The ratio of U.S. manufacturing imports to U.S. manufacturing output doubled between the early 1970s and the late 1980s.
- **Top U.S. customers and products:** The top 5 purchasers of U.S. exports, in order, are Canada, Japan, Mexico, the United Kingdom, Germany and South Korea. The leading U.S. exports in 1990 were machinery (30%); other manufactures (24%); transport equipment (16%); and chemicals, agricultural products, and crude materials (each at 10%).
- **Bottom line:** U.S. manufacturing export performance is strong in such high-tech products as aerospace, software and pharmaceuticals. Several foreign competitors have already surpassed U.S. industry in a number of areas formerly considered American manufacturing strengths, including autos and consumer electronics. Manufacturing imports account for most of the U.S. trade deficit.

PRODUCTIVITY

GDP per Manufacturing Employee
(Constant 1980 Dollars)



Source: Council on Competitiveness and OECD National Accounts

Plant and Equipment

U.S. manufacturing productivity growth was brisk in the 1980s, but Other G-7 productivity growth was even stronger.

- **Good decade capped by bad year:** After seven years of robust productivity growth, real U.S. manufacturing productivity declined slightly in 1989. Nonetheless, the annual (compounded) U.S. growth rate from 1982-1988 was 5.5 percent, much higher than the 1.6 percent average annual growth rate for 1972-1981.

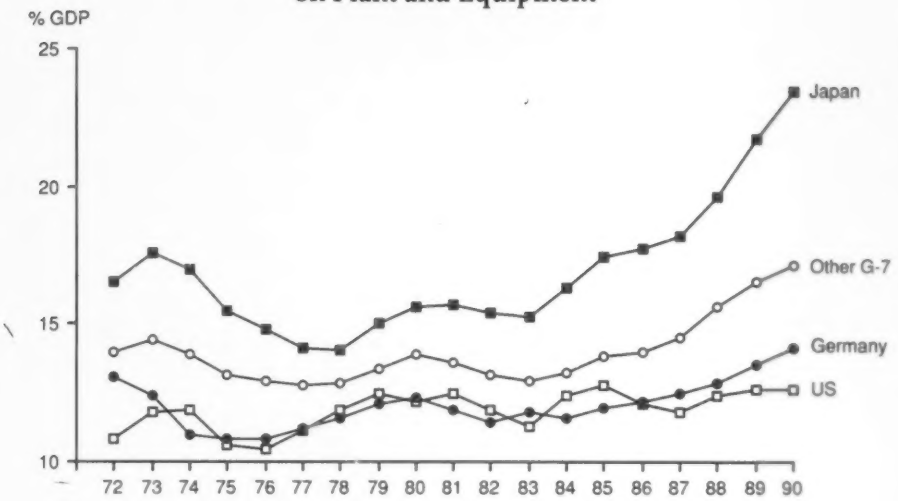
- **Japan up, Germany down:** During the 1970s, real productivity growth in the G-7 ranged from 1.7 to 5.6 percent per year. Japan and Italy recorded the highest productivity gains, posting 5.6 percent and 5.2 percent increases, respectively. During the 1980s, productivity growth rates picked up in all the G-7 economies except Germany. Japan maintained the highest growth rate in the 1980s (5.7 percent). German real productivity growth dropped from 3.5 percent in the 1970s to 1.3 percent in the 1980s.

- **U.S. still leads overall:** In nominal PPPs, the Japanese worker was 63 percent as productive as the U.S. manufacturing worker in 1972. By 1988, the Japanese were 80 percent as productive. German productivity made somewhat smaller gains on U.S. productivity levels, moving from 65 percent of the U.S. level in 1972 to 71 percent in 1988.

- **Bottom line:** Although U.S. productivity continues to be the world's highest, there are many challengers. Japan's productivity growth has been faster than any other G-7 country. In some key traded-goods sectors, such as autos, steel, machine tools, and some sectors of electronics, other countries have already equalled or surpassed U.S. productivity levels.

INVESTMENT

Private Industry Expenditure on Plant and Equipment



Source: Council on Competitiveness and OECD National Accounts

Plant and Equipment

For the past 3 years, the United States has invested less in plant and equipment as a share of real GDP than *any* other G-7 economy.

- **U.S. investment flat:** U.S. investment remained at 12.6 percent of real GDP in 1990, the lowest of all the G-7 countries.

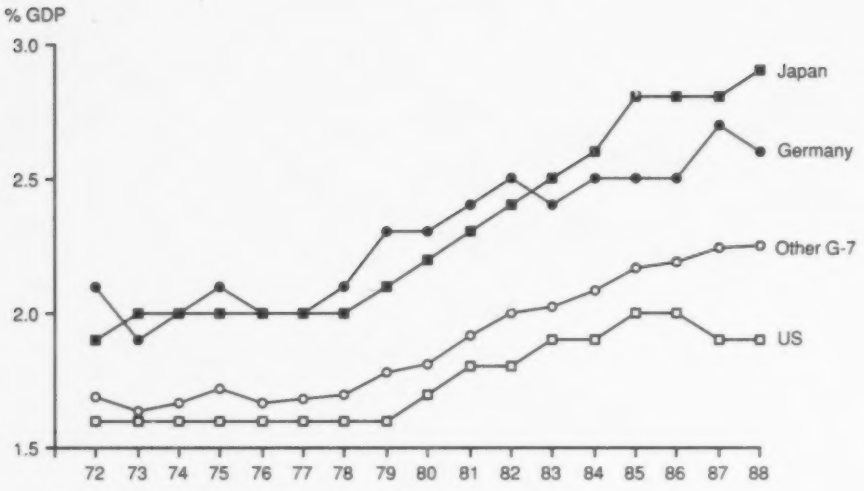
- **Japan sets the pace:** Japan allocated 23.4 percent of its national income to new factories, machines, office buildings, and equipment in 1990, almost twice as much as the United States. Between 1985 and 1990, the Japanese real rate of investment as a share of GDP increased 34 percent.

- **The dollar level conundrum:** Given that Japan's GDP is so much smaller than U.S. GDP [from 40 to 60 percent, depending on the dollar conversion used], Japan invests more relative to the size of its economy than the United States no matter which exchange rate is used to calculate absolute dollars spent on investment:
  - Using 1990 average exchange rates, Japan outinvested the United States by about $62 billion in 1990 — $585.7 billion to $524.1 billion.
  - Using 1980 exchange rates, Japan's investment was about 84 percent of U.S. investment in plant and equipment.
  - Using PPPs, Japan invests about half as much as the United States.

- **Bottom Line:** For over 20 years, the United States has been investing a smaller percentage of its GDP in private plant and equipment than the Other G-7 average. U.S. industry is now faced with an ever-expanding group of highly modern, foreign industrial competitors. Whether calculated in relative or in absolute terms, G-7 investment rates — especially Japan's — are very high and still growing. If U.S. industry hopes to compete with the world's best, it must start investing like the world's best.

INVESTMENT

Non-Defense R&D Expenditure



Source: Council on Competitiveness and National Science Foundation (NSF)

Non-Defense R&D

As a percent of GDP, U.S. investment in non-defense R&D is about one-third less than what Japan and Germany spend.

- **U.S. non-defense R&D spending flat:** U.S. non-defense R&D spending has remained flat over the past decade, fluctuating between 1.9 and 2 percent of GDP. In 1988, it was 1.9 percent of GDP.

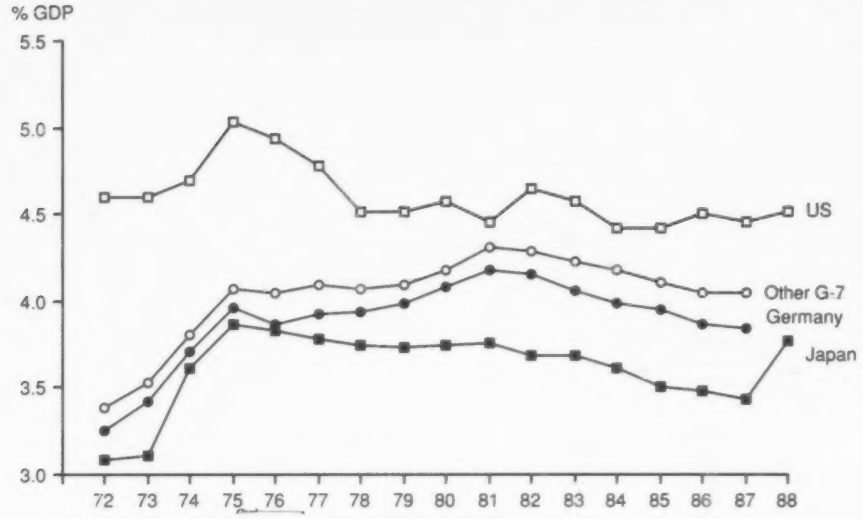
- **More than some, but far less than others:** Although the United States invested more in 1988 in non-defense R&D as a percent of GDP than Italy (1.3 percent), the United Kingdom (1.7 percent) or France (1.8 percent), it invested far less as a share of GDP than Germany (2.6 percent) and Japan (2.9 percent). The U.S. has invested less than Germany and Japan as a share of GDP for more than 20 years.

- **Pendulum swings back:** In 1970 and 1980, less than half the total of U.S. government R&D funding was directed towards defense. In the early 1980s, U.S. government investment in R&D shifted heavily in favor of defense. After peaking at 64 percent of total government R&D in 1986, defense R&D spending declined to 61 percent of total in 1990. Nonetheless, the Japanese and German governments spend very little on military R&D.

- **Bottom line:** Despite a recent U.S. shift towards more civilian R&D spending, two of America's strongest competitors are spending about one-third more of their national income on developing commercially relevant processes and technologies than the United States.

INVESTMENT

Government Expenditure on Education



Source: Council on Competitiveness and OECD National Accounts

Education

U.S. education spending remains well above the Other G-7 average, but academic performance is poor in too many areas.

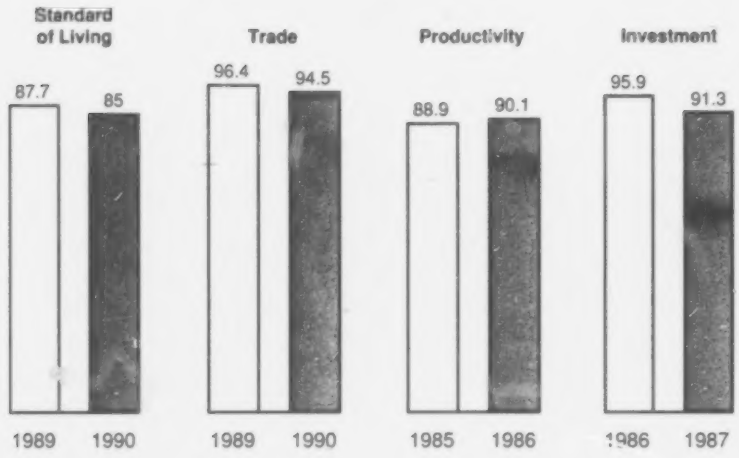
- **U.S. spends the money:** The United States spends more on education as a share of GDP than the Other G-7 average and more than either Japan or Germany. In 1987, U.S. investment in education was 4.5 percent, compared to the Other G-7 average of 4.1 percent.

- **But is not getting the results:** The uneven quality of schooling in the United States has been particularly apparent in kindergarten through 12th grade (K-12). Truancy, poor academic performance, and an absence of proper skills-training programs, especially for the non-college bound, are among the major concerns.

- **Bottom line:** By failing to use education resources more effectively, we are not adequately preparing the nation's workforce to meet the needs of a competitive economy. Only by building up the nation's collective skills through a better K-12 education, solid post-high school training, and adequate emphasis on technical subjects, will we increase U.S. economic competitiveness.

INDEX

SUMMARY



Source: Council on Competitiveness and OECD National Accounts

Standard of Living

- The U.S. Standard of Living Index dropped slightly for the first time in eight years, indicating a negative real growth rate for U.S. standard of living in 1990. The United States enjoys a high standard of living, but a look at the Standard of Living Index for the Other G-7 countries confirms that all of them have made stronger gains in real income per capita since 1972 than the United States. The rapid catch-up of other G-7 countries to the U.S. level explains why the Index stood at 85 in 1990, its lowest point ever in our historical series.

Trade

- The Trade Index for the real U.S. share of world manufactured goods exports declined slightly in 1990 to 94.5 from the previous year's 96.4. Nonetheless, U.S. export performance is still well above mid-1980 levels. By the late 1980s, U.S. manufactured goods exports had returned to a more historical norm of between 11 and 12 percent of world share.

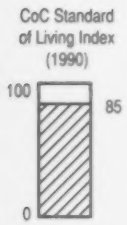
Productivity

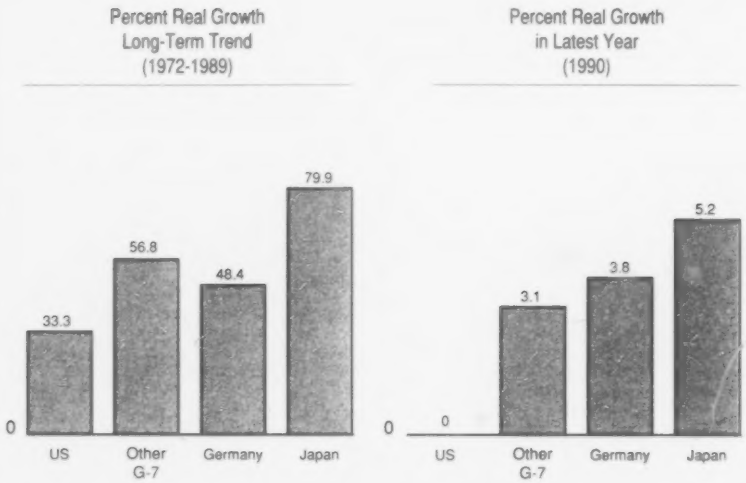
- The U.S. Productivity Index was 90.1 in 1986 (the most recent year for which we have complete data for all the G-7 countries). U.S. manufacturing productivity improved during the 1980s relative to the previous decade, but other G-7 countries improved their productivity even more rapidly.

Investment

- The U.S. Investment Index dropped from 95.9 in 1986 to 91.3 in 1987 (the most recent complete data available for the G-7). This drop reflects a decline in U.S. investment in plant and equipment and non-defense R&D — measured as a share of GDP — relative to the Other G-7 average. Although the United States invested relatively more than the Other G-7 in education, this investment has not been matched by higher levels of academic performance at the K-12 level.

GROWTH IN STANDARD OF LIVING





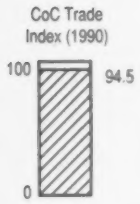
Source: Council on Competitiveness and OECD National Accounts

- The U.S. Standard of Living Index was 85 in 1990, the lowest it has ever been in our historical series. This relative decline is due primarily to the rapid growth in standards of living in most of the other G-7 countries and to the relatively slower growth in the United States. In 1990, the real U.S. standard of living even *declined* slightly for the first time in 8 years.

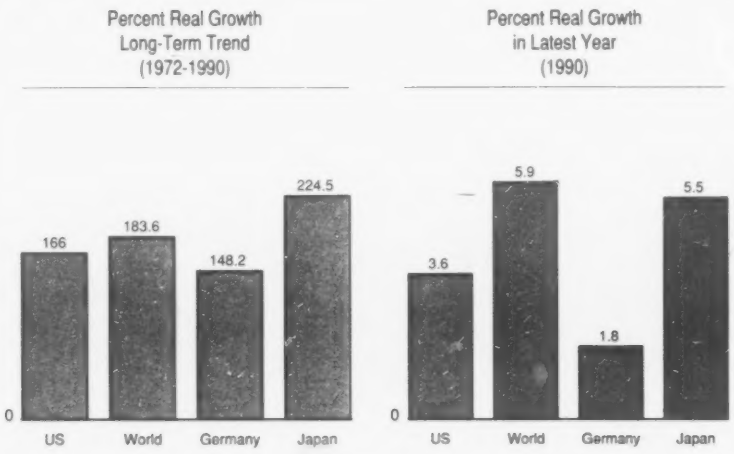
- The U.S. standard of living was 33 percent higher in real terms in 1990 than it was in 1972, whereas the Other G-7 average was 56.8 percent higher. Japan has increased its standard of living by nearly 80 percent in real terms since 1972, and Italy has also made rapid progress with a 64 percent real growth rate.

- Although the increase in the Other G-7 average was driven up by the rapid catch-up of Japan and Italy, even countries such as Germany and Canada, which started out with high economic bases in 1972, were able to increase their standard of living faster than the United States. From 1972-1990, Germany's standard of living increased 48 percent and Canada's rose 55 percent.

***Standard of Living** is defined as real GDP per capita. Calculations are based on 1980 constant dollars.*



GROWTH IN REAL MANUFACTURED EXPORTS



Source: Council on Competitiveness and OECD National Accounts

- The U.S. Export Index was 94.5 in 1990, meaning that the U.S. share of world manufactured exports was 94.5 percent of what it had been in 1972. This decline reflects the fact that the United States claimed 11.7 percent of world manufactured exports in 1972, compared with just over 11 percent in 1990.

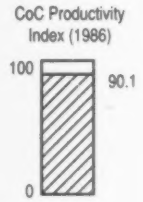
- Although there was a 2 percent decline in this year's Index from the previous year, U.S. export performance was strong in the late 1980s relative to the mid-1980s. In 1986, for example, the Export Index stood at 73.1, reflecting the fact that the U.S. share of world exports had dipped to 8.5 percent.

- The worldwide average for manufactured exports grew by 184 percent from 1972 to 1990. U.S. exports grew 166 percent. Of the G-7 nations, only Japan, with 224.5 percent real growth, and Canada, with 218.3 percent real growth, exceeded average world export performance. Japan has done so consistently every year since 1974.

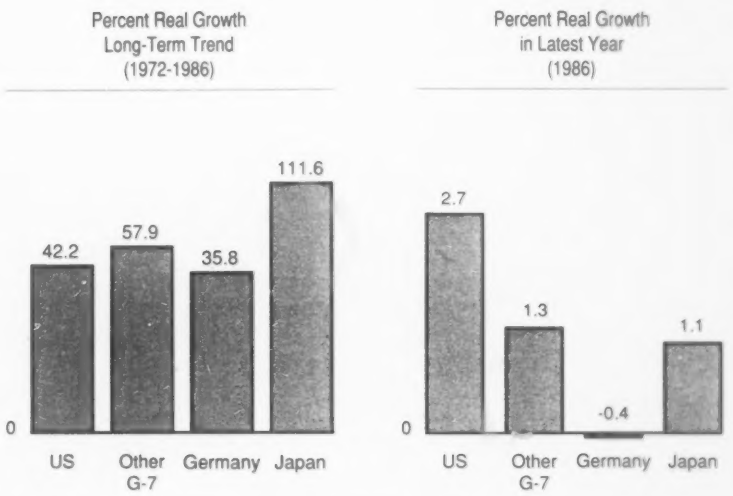
- German export growth has lagged the world average since 1974. Nonetheless, in real terms, Germany continues to enjoy the largest share of world exports — 13.6 percent last year.

- The G-7 countries with the strongest export growth from 1972 to 1990 were Italy (176.9 percent real growth), Canada (218.3 percent), and Japan (224.5 percent). The weakest was the United Kingdom (110.5 percent).

*The **Trade Index** measures the U.S. share of real world manufactured exports. How well we live is increasingly determined by our ability to compete in world markets. The Council chose exports as the single best indicator of U.S. ability to compete worldwide. The Index focuses on the U.S. share of total world manufactured exports, rather than just U.S. performance compared with the Other G-7, to account for the rapid export growth in developing and newly-industrialized economies. The Trade Index is calculated in real 1980 dollars.*



GROWTH IN MANUFACTURING PRODUCTIVITY

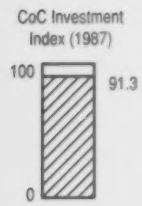


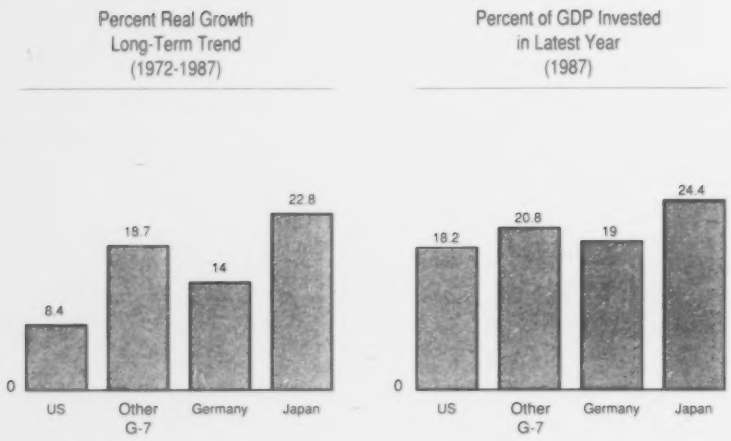
Source: Council on Competitiveness and OECD National Accounts

- The U.S. Productivity Index was 90.1 in 1986. This means that from 1972-1986 U.S. labor productivity growth was roughly 90 percent as strong as the Other G-7 average performance.
- Although we do not have a full seven-country sample for 1988, we do have data for Germany, Japan, and the United States. In these figures, we see that by 1988 Japan had increased its productivity by 143 percent over 1972 levels. Over the same time period, Germany had increased its productivity by 36 percent and the United States by 60 percent.
- The above Long-Term Trend chart helps explain the relative U.S. decline in productivity by showing the performance of other countries. From 1972-1986, U.S. manufacturing productivity grew by 42 percent in real terms, and the Other G-7 average grew 58 percent.
- Strong productivity performances by the Italians and the Japanese have driven up the Other G-7 average. In 1986, the Italians were 87 percent more productive in real terms than they were in 1972. The Japanese more than doubled their productivity in the same period.
- By 1986, German manufacturing productivity growth was 36 percent higher than in 1972, well below the average Other G-7 growth rate.

The Productivity Index *measures output per employee in the manufacturing sector. Productivity fundamentally affects the cost of American products relative to those of other nations and underpins real economic growth. The Productivity Index compares U.S. performance with the average of the Other G-7. It is based on 1980 constant dollars and reflects the latest year for which we were able to obtain comprehensive cross-country data.*

GROWTH IN TOTAL INVESTMENT AS A SHARE OF GDP





Source: Council on Competitiveness, OECD National Accounts, and NSF

- Our Investment Index shows that U.S. total investment in 1987 was roughly 91 percent the average investment effort of the Other G-7 countries. (1987 is the latest year for which we have data in all three of our investment categories for all seven countries.)

- 1987 marked the worst relative U.S. investment performance since 1972. The decline in relative U.S. investment can be explained by the fact that some of the other G-7 countries have escalated their investment efforts at a very rapid pace, while the United States has kept its investment levels fairly constant as a share of GDP.

Non-Residential Fixed Investment:

- Private plant and equipment expenditures increased dramatically in some G-7 countries in the late 1980s. Japan, in particular, invested an ever-growing share of its national income in plant and equipment. The United States did not match the relative rate of investment growth of other G-7 countries. Since 1987, U.S. relative real investment in plant and equipment has been below that of any other G-7 country.

Non-defense R&D:

- U.S. non-defense R&D investment declined slightly in 1987. The Other G-7 average rose, reflecting increased investment, particularly in Germany. For at least 20 years, German and Japanese non-defense R&D investment as a percent of GDP has been consistently higher than the U.S. share.

Education:

- U.S. education expenditures declined slightly from 1986 to 1987, while those of the Other G-7 countries remained unchanged.

__The Investment Index__ is a weighted average of annual expenditures for plant and equipment, non-defense R&D, and education. These investments build the skills, knowledge, and assets that underpin productivity, trade and, ultimately, the standard of living. The Investment Index compares the U.S. performance with the average of the Other G-7 nations. It reflects the latest year for which we were able to obtain comprehensive cross-country data.

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The Competitiveness Index was developed by the Council on Competitiveness in conjunction with the WEFA Group.

Council Executive Committee member Michael Porter (Professor, Harvard Business School) helped develop the initial framework for the Index. Council Executive Vice President Daniel F. Burton, Jr. directed the project, and Council Associate Andrée C. Dumermuth produced the Index. Allen Shiau (Senior Vice-President, World Service, The WEFA Group) supervised data collection at WEFA and, together with Council staff, made several methodological revisions for the 1991 Index. Chris Benko (Assistant Economist, WEFA) produced the data.

ABOUT THE COUNCIL

Founded in 1986, the Council on Competitiveness is a nonprofit, nonpartisan organization of 150 chief executives from industry, organized labor, and higher education who have one overriding objective: to improve the ability of American companies and workers to compete in world markets, while raising living standards at home. Among the Council's specific goals are: to assist in the development of far-sighted government policies and private-sector initiatives that help U.S. industry and workers compete; to promote consensus and cooperation on competitiveness-related issues within the private sector; and to increase public awareness of the linkages between America's competitiveness and its economic well-being.

The Council is governed by a 27-member Executive Committee and draws on the resources of its National Affiliates — more than two dozen research organizations, professional societies, and trade associations — to help coordinate private sector activity. The Council is privately supported through contributions from its members, foundations, and other granting institutions.

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COMPETITIVENESS

900 17th Street, N.W., Suite 1050
Washington, DC 20006
(202) 785-3990